Northwest Power and Conservation Council

December 3, 2013

MEMORANDUM

TO: Power Committee

FROM: Charlie Black

SUBJECT: Draft RFP for Redevelopment of the Regional Portfolio Model

At the Power Committee meeting in Helena on October 8, I provided a report on the proposed approach to redevelop the Council's Regional Portfolio Model (RPM). Following that discussion, staff has proceeded with formulating a draft request for proposals (RFP) to select a resource planning software company to redevelop the RPM. This effort has included discussing the RFP process with the System Analysis Advisory Committee (SAAC) on November 14. The work has also benefitted from the results of a report that Dr. Douglas Logan has prepared documenting the existing implementation of RPM and providing recommendations regarding redevelopment.

Power Division staff has prepared a draft outline of the RFP, which will be discussed at the Power Committee meeting on December 10. Legal Division staff is using this outline as the basis for development of the RFP itself.

A presentation summarizing the outline of the proposed RFP is attached, along with a presentation from Doug Logan summarizing his review of the RPM implementation.

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Regional Portfolio Model Software Redevelopment Request for Proposals

Outline

Presentation to Power Committee

Charlie Black

December 10, 2013

I. Contracting Organization

Northwest Power and Conservation Council

The Council and its Activities

- Interstate compact (ID, MT, OR, WA)
- Created by Congress in NW Power Act
- Three primary functions:
  a. Regional power plan
  b. Fish and wildlife program
  c. Public involvement in a. and b.

II. Services Desired by the Council

- Software redevelopment of the Council's Regional Portfolio Model (RPM)
- Redeveloped version of RPM must be available for Council use by February 2015 for the Seventh Northwest Power Plan

III. Due Date for Proposals

For a respondent's proposal to be considered, it must be ***delivered to the Council no later than 5:00 pm Pacific Standard Time on Thursday, February 6, 2014.***

By e-mail, to:

sossmann@nwcouncil.org
Sharon Ossmann
Administrative Division Director
Northwest Power and Conservation Council

IV. Council Bears No Costs or Obligations

- Prospective or actual respondents bear any and all costs and risks of participation in this RFP process
- The Northwest Power and Conservation Council has no obligation to select any proposals or to contract with any respondent to this RFP

V. Description of RPM

- Integrated resource planning model used for Council's Fifth and Sixth NW Power Plans
  - 20-year regional plan
  - Seventh Power Plan to be adopted by end of 2015
- Sophisticated and unique risk analysis methodology
  - 'scenarios on steroids' (simulates numerous candidate resource plans across a broad range of possible futures)
  - addresses tradeoffs between expected cost and risk
  - helps identify adaptive resource strategies

V. Description of RPM (continued)

Summary of existing implementation of RPM

- Complex system built on multiple technology platforms (Excel version 2003 driven by Crystal Ball and OptQuest; supported by Access, Windows XP, PowerShell)
- Difficult to use – involves numerous manual steps, model user must have advanced knowledge of subject matter and information technologies
- Data preparation and management is complex, cumbersome and time-consuming

V. Description of RPM (continued)

Documentation of existing implementation

- "RPM Implementation Review" Doug Logan Report (November 2013)
- "Assessment of the Regional Portfolio Model" RPM Review Panel Report (December 2012)
- "The Portfolio Model" Appendix L., Fifth Northwest Power Plan
- "The Regional Portfolio Model" Appendix J., Sixth Northwest Power Plan
- Etc.

VI. Role of RPM in Seventh Power Plan

- The Council intends to use other portfolio analysis models and methods in addition to RPM to develop the Seventh Northwest Power Plan. These may include:
  - Genesys – Resource needs and adequacy analysis for regional energy and capacity
  - Flexibility metric and tools – Power system balancing, including to integrate variable generation from intermittent resources
- Uses of RPM for the Seventh Power Plan may include:
  - Strategic risk analysis, including cost and risk tradeoffs
  - Testing of policy propositions (e.g., strategies and costs to achieve postulated goals for regional power system greenhouse gas emissions)

VII. Software Development Implementation Approach

Respondents may wish to submit proposals based on one or more alternative approaches to software development implementation, including but not limited to:

- Implementation of the RPM methodology in the form of a new, stand-alone software model
- Implementation of the RPM methodology as an addition or modification to existing integrated resource planning software

VIII. Software Development Funding Approach

Respondents may wish to submit proposals based on one or more approaches to software development funding, including but not limited to:

- Council pays a fee for software development and Council retains full rights to use and distribute the model to third parties
- Respondent bears some or all costs of software development in return for commercial rights to market the model to third parties; Council retains full rights to use the model

IX. Software Accessibility Approach

As noted above, the Council is obligated to involve the public in development of its regional power plans. Making the new RPM model accessible to participants in the Council's power plan process is a desired goal. Thus the Council encourages respondents to include opportunities to make such access available, and to describe the accessibility approach in their proposals.

X. Software Development Priorities

- Software redevelopment must be completed so that a new version of RPM is available for use by Council staff no later than February 2015
- The following functionalities must be delivered by February 2015:
  - Algorithms and logic for the core RPM strategic risk analysis methodology
  - Data input and output linkages that enable RPM to be integrated with a new power planning data management system
  - Functional, but not necessarily polished user interface
- The Council may elect to commission more complete and/or updated implementation of the RPM methodology, improve the user interface, etc. after February 2015

XI. Required Contents of Proposals

- Respondent name, corporate information
- Software development implementation approach
- Software development funding approach
- Software accessibility approach
- Extent and details of RPM methodology implementation
- Description of data management and integration
- Description of user interface functionality
- Pricing proposal
- Project schedule
- Respondent's capabilities and experience developing integrated resource planning software
- Identification of key personnel, their qualifications and roles under the proposal
- References from existing or recent customers

XII. Disclosure of Proposals

The Council uses a System Analysis Advisory Committee to discuss various power planning modeling topics with regional stakeholders. The Council wishes to make proposals submitted in response to this RFP available for review by SAAC members. Accordingly, respondents must identify any portions of their proposals that are proprietary and may not be disclosed to SAAC members. If respondents wish to make such review subject to a non-disclosure agreement, respondents shall request this in their proposal.

XIII. Evaluation of Proposals

- A panel of Council staff will evaluate proposals that meet minimum requirements
- Proposals will be evaluated and compared using a scoring system that may include the following types of criteria:
  - Project cost
  - Respondent capabilities and experience
  - Software development implementation approach
  - Software development funding approach
  - Extent and details of RPM methodology implementation
  - Assurance of project completion on-time

XIII. Evaluation of Proposals (continued)

- Council staff may select one or more proposals for further consideration, including in-person interviews
- Council staff may then identify one or more proposals for consideration by the Council's Power Committee
- The ultimate decision to select a winning proposal, if any, will be made by a vote of the Council

XIV. Draft Schedule for RFP Process

The following draft schedule is subject to change at the exclusive discretion of the Council and its staff

• Council Issues RFP	December 20, 2013
• Pre-Bid Conference	January 8, 2014
• Proposals Due	February 6, 2014
• Council Vote to Select Winning Proposal	March 12, 2014

RPM Implementation

Douglas M. Logan
November 14, 2013

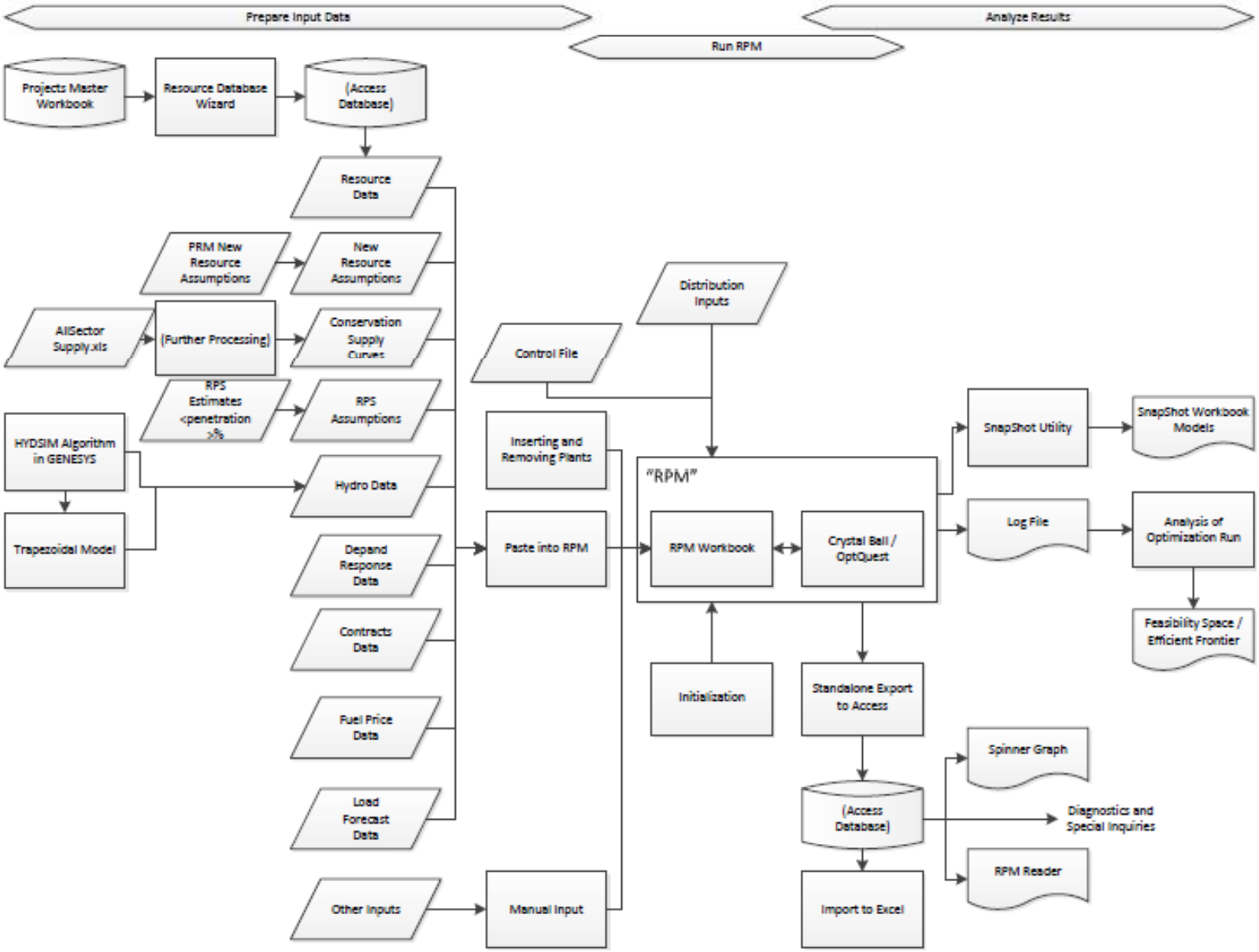

Figure 1. RPM Process Flow Diagram.

Table 1. Components of RPM.

Step *	Component	Description	Input	Output	Platform	Comments	Documen-tation	Priority †
Prepare Input Data								
	Projects Master Workbook	This workbook contains the data for all existing and planned PNW generating resources, except hydro other than independent hydro.			MS Excel	This workbook exists independently of RPM and provides data to other models in addition to RPM, including Aurora and GENESYS.	[2], L-92. [2], L-97.	4
	Resource DB	This database holds data from the Projects Master Workbook and prepares it for transfer to RPM. It includes an Access form (the Wizard) that provides an interface to macros for performing the tasks at the right.	Resource Projects Workbook	Data rows to paste into RPM	MS Access	The Wizard masks the 44 queries in the database, only three of which are left visible to the user. All but one of the 19 tables are visible, but the user interacts with only a half dozen of these. The macros included the following tools: • Unit Comparison (against previous data) • Create workbook with records to past in RPM • Assists the user with an R method for cluster analysis on resource operating features • Create Workbook Bubble Chart of Clusters, to illustrate aggregates of resources	[3] [4]	1
						•		
	PRM New Resource Assumptions	This workbook contains parameters for new generic resources			MS Excel			3
	Converting Overnight to Period Costs v08.xls	Worksheet to convert costs for use with RPM's standard periods.			MS Excel	Used in developing new resource assumptions.		2
	New resource	Processed new resource data			MS Excel	Provided in ad hoc files and manually		3

… plus 8 more pages …

Redevelopment Priorities

- "1" denotes core functionality to be included in the base redevelopment project.
- "2" denotes other desirable functionality that is not necessarily critical to complete the seventh plan and could be selectively developed in parallel with core functionality once particular basic core design parameters are set, such as data storage architecture.
- "3" denotes functionality, such as input data preparation, that might best be left outside the new system.
- "4" denotes components that will not be needed in the new system because they would be either redundant or irrelevant.

Redevelopment Priorities – 1

Core functionality to be included in the base redevelopment project ("1")

- Resource DB
- OptQuest log file
- RPM Workbook
- …

Redevelopment Priorities – 2

Other desirable functionality not necessarily critical to complete the seventh plan, but selectively developed in parallel with core functionality ("2")

- Converting Overnight to Period Costs v08.xls
- Analysis of Optimization Run (subProcess)
- …

Redevelopment Priorities – 3

Functionality, such as input data preparation, that might best be left outside the new system ("3")

- PRM New Resource Assumptions
- New resource assumptions
- All Sector Supply mmddyy.xls
- …
- Trapezoidal Model
- …

Redevelopment Priorities – 4

Components that will not be needed in the new system because they would be either redundant or irrelevant ("4")

- Projects Master Workbook
- …
- Inserting and Removing Plants
- …

Some Issues

- RPM staffing
- Possible Council objectives with regard to RPM:
  - Human resources
  - External use
  - Transparency
  - Ease of updating and burden of execution
  - Risk
  - Availability for seventh plan
  - Communication with stakeholders

Suggested Architecture

- A single, consolidated database containing all resource, forecast, and other input data and parameters, and output data for multiple cases
- Installation of the database and model at a centralized location
- Creating of a new model with all the functionality currently used in the existing implementation of RPM/Crystal Ball/OptQuest
- Secure, remote access to the centralized system, possibly through a web browser, for Council staff, stakeholders, and utilities.

Appendix

Executive Summary of the RPM

Revised

- The Panel has concluded RPM has the capability, with correct inputs, to adequately address the analytic criteria for regional resource planning. RPM solidly capture the central economic tenants of resource planning under uncertainty.

- The Panel has also identified areas that could be improved and limitations with RPM.

- The Panel offers the several specific recommendations on inputs for use in the next cycle of developing a regional power plan.

- RPM also needs to be validated more transparently to increase the Council and stakeholder confidence in its results. In general, validation means demonstrating that model results match reality.

Executive Summary of the RPM

Revised

- The Panel recommends a deliberate process for engaging the Council and stakeholders in training constructing input assumptions, and reviewing results. Training on RPM should be integrated with the power planning process, rather than scheduled as a separate activity. Concepts should be introduced as they become relevant in the process. A synchronized, integrated training approach will make the concepts more concrete, less abstract, and more relevant to the plan.

Figure 1. Process Flow Diagram